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30 December 1958

MEMORANDUM FOR: Acting Chairman, Agency Planning Group for a Mechanically Integrated Reporting and Communication System

SUBJECT : Project ACSI MATIC

I. Summary of Project Objectives, January 1958

A. General:

"The objectives of Project ACSI MATIC are recommendations both as to the near and distant future concerning changes in the physical (equipment, manpower, and facilities) and nonphysical (organizational, operational, and analytical) structure of OACSI to:

1. increase its efficiency
2. increase its potential for handling expanded missions,
and, 3. make greater use of available information."

Interim report, PROJECT ACSI MATIC, Chapter I, p. 1, 30 January 1958 - SECRET.

"The original proposal and work statement stressed that the general approach to be taken on Project ACSI MATIC is a systems approach. A system for processing data into intelligence must of necessity consist of human operators, automatic (electrical or mechanical) apparatus, and operational procedures to accomplish such fundamental functions or operations as collecting, indexing, communicating, filing, storing, retrieving, evaluating, collating, synthesizing, analyzing, predicting, and reporting. ...Primarily the attempt is to arrive at a conceptual design of a system of men and machines for processing data into strategic intelligence." ibid. I, p. 5.

RCA's resume of the ACSI intelligence system "contains a discussion of the fundamental operations that must be performed by the system and the feasibility and problems of incorporating automatic devices into the system. The potential of using automatic devices to make simple decisions based on logical rules is also discussed and an illustration of a simple logic problem with its machine solution is presented". ibid. I, p. 7.

B. Short-run projects:

"By agreement with OACSI, iterim solutions to present problems would be attempted only when the problems were particularly pressing and their solutions would not (1) require major change of operation or organization, or (2) require the purchase and installation of large expensive equipment that might not be compatible with the system recommended for the future, or (3) inhibit the primary objective of Project ACSI concerning the future system. During the course of investigating OACSI activities, two such problems were encountered. The first of these concerns the dissemination, or more accurately, the determination of the proper distribution

list for incoming Army (R) reports. The present method depends on the ability of the library analyst to:

1. read, translate and commit to memory the statements of interest from each of over 100 customers or separate activities both within and outside OACSI,
2. read and catalog or index on the average of 30-40 reports per day, and
3. on the basis of (1) and (2), specify which customers should get a copy (or copies) of each report.

A possible solution to this problem is presently being prepared and will be submitted to OACSI for evaluation and test. The solution being worked upon is in essence:

1. a modified subject and geographical area breakdown or dictionary of standard terms,
2. a translation of each statement of interest into those standard terms,
3. a dictionary which lists all customers interested in a given subject, and
4. a mechanical aid that automatically gives the distribution list once the library analyst has cataloged or indexed a report.

"The second such problem encountered concerns the reproduction of the reports in correct quantity after the distribution list is determined.... The situation would be considerably improved if some method could be found to copy the enclosures onto a multilith master cheaply and quickly. The enclosures could then be handled in the same way as the attache's reports. A relatively new reproduction technique called Electrofax is now being investigated for this application." ibid., I, pp. 7-8.

C. Automation of analyst functions:

"During the investigation of OACSI activities, it became apparent that one of the most important, difficult, and complex activities is that of collation which is undertaken by the desk analysts in the production divisions. The desk analyst must read, abstract, file, evaluate, arrange, analyse, and interpret all data received concerning geographic and/or subject specialty... It is apparent that the collation activity is of fundamental importance and that the individual and collective capacities of the desk analysts affect to a great extent the success of the entire organization in attaining its objectives. For this reason, we have singled out and devoted special effort to the problems of collation and of increasing desk analysts' effectiveness. The complexity of the problem is such as to make it highly unlikely

that a simple interim solution of wide and immediate application can be found. Thus, we are attempting to design from fundamental considerations a man-machine collation subsystem as part of the future intelligence system. A sample problem dealing with the major elements of ground forces order of battle has been formulated. A solution consisting of the processing, partial evaluation, and filing of input data with the automatic data processing equipment is being completed. The man-machine combination will relieve the man of the burden of routine processing of inputs, maintaining the files, arranging data for publication, searching for data and making simple decisions. The man will monitor the operation of the machine, override machine decisions, select rules of decision for the machine, and assign responsibilities to the machine. In addition, the man must make the more difficult decisions, prepare finished intelligence reports and serve as the inductive reasoning element of the man-machine combination." ibid., Ch. I, pp. 8-9.

II. Restatement or expansion of certain ACSI MATIC objectives, Nov. 1958

A. Mechanized collation

"The magnitude of the library problem is well illustrated by the 12 miles of open file shelves and 4-drawer combination safes in ACSI, Hq, DA, including the Central Records Facility at Ft. Holabird, Md., and the seven technical services intelligence agencies, but excluding the Army Map Service. Microfilms combined with aperture punch cards, the punch cards containing the index code, have served to reduce the physical volume of document holdings as well as the time required for searching indexes. This development has assisted librarians, making it possible to retrieve documents far more rapidly than under manually operated library systems. The library users' paramount need, however, is the quick retrieval of intelligence information rather than documents, as and when needed.

"This last finding gave the clue to the further progress of the study. The intelligence library has a tendency to swamp the customer with more information than he wants or needs. How can this situation be rectified? This led to a study of intelligence research processes, and it very soon became apparent that the man-machine system considered in Project ACSI-MATIC should aim above all to facilitate the work of intelligence researchers. The raw data collation files of the researchers represent a filtering process whereby the mass of information in the intelligence library has been reduced to worthwhile holdings. Through study of raw data collation files, the researcher builds up logical sequences from fragmentary information; these are transferred to accepted intelligence data files. Through these processes of analysis and synthesis, finished intelligence is produced and published. Most

of the routine maintenance of current collation and accepted data files can be transferred to an electronic computer as can also many of the simpler processes of synthesis.

"It is readily seen that a mechanized collation and accepted data file of this nature can be used not only for research, but also as a supplement to the regular library document index. With such employment, the library customer would first study the filtered information holdings in research files where the chaff has been winnowed out by the research specialist. He would probably find most of his information needs in these files, using the library index as a secondary guide." 1/

B. Proposal for automated abstracting:

"The Auto Abstracting technique being developed by IBM is likely to find an important application in exploiting foreign documents. It should be considered as one of three links in current research and development projects on automatic translation: First, automatic character recognition providing for reading of printed texts and transfer-printing of texts on machine tapes (without this device, intelligence agencies would be faced with a colossal typing operation); second, Auto Abstracts based on the full text; and third, automatic translation to English of Auto Abstracts. The Auto Abstracts should eliminate much of the routine expended by linguists in reading voluminous books and news articles in order to determine what paragraphs or sentences to translate. More important, the Auto Abstracts should save scientists and engineers in United States research centers from becoming swamped with reading material once automatic translation is introduced (expected in 1959). The Auto Abstracts should guide the reader to the salient parts of a study, and full translation of a section of a foreign book could be requested, when needed, on the basis of the abstract.

"Other expected applications of Auto Abstracts pertain to abstracting finished intelligence studies, lengthy field reports and cables. These abstracts should be useful in research collation files, eliminating much of current routines in typing abstracts on file cards. They would be similarly employed in library index files, providing the file searcher with an indication of the usefulness of a document." 1/

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1/ Outline of ACSI, HQ, DA Management Engineering Program for Improvement of Department of the Army Intelligence Information Processing, pp. 7-9, 5 Nov 58. CONFIDENTIAL.